The letters **PACS** stand for **P**rogrammable **A**utoclave **C**ontrol **S**ystem.

The object of the control system is to produce commands and transmit these to the sterilizer components enabling for a number of sterilization processes to be accomplished in accordance with a predicted pattern. The command signals are generated by the control unit computer program in combination with measurements of the process parameter values. The latter consist mainly of times, temperatures and pressures.

Various equipment can be connected to the control unit for programming, monitoring and recording the sterilization processes.

The operator communicates with the control unit via a control panel or a standard PC (OPC). The control panel is available in the versions OP1 and OP2, where OP1 is the smallest type and consists of two door operation keys and eight signal light diodes only.

The OP2 panel has a 102 x 25 mm LCD, six program selector keys, signal lights and up-down and right-left keys to display desired information in preprogrammed windows. Programming can also be done by means of the OP2, but this is limited to numeral values. The OP2 panel is mainly designed for entering operator adjustable parameters.

There are connection ports in the PACS 2000 allowing a maximum of two OP1s, two OP2s or one of each. Simultaneously with this combination, OPC can be connected, but only one of all these can be the commanding unit at a time.

All operating panels are made for monitoring the processes by displaying any set parameter value as well as current values on request. All relevant data associated with a particular process such as batch No., operator No., date, etc., may be entered by the operator using OPC.

Documentation of programs, system definitions and process data can be made by connecting a printer to OPC. A host computer can also be connected direct to the control unit CPU.

Where the demand requires a measuring and monitoring system, completely independent of the control system, a PACS SUPERVISOR system may be connected. This contains a CPU, OP2 and interfaces with the CPU of the sterilizer control unit. The SUPERVISOR measurements are made by its own separate temperature and pressure sensors.

The computer contains a program for automatic calibration of temperature and pressure transducers. Alternatively correction constants, when known, may be entered manually. Among PACS 2000 test functions there are facilities for activating analog and digital outputs and monitoring analog and digital inputs. With OPC or OPH, up to 16 service alarms, flagged as display codes, can be programmed, based either upon operation time in hours or number of sterilizing cycles. In both cases the maximum programmable digits are 9999. Service alarms are displayed also by OP2, but this panel will not allow for programming of these.

The hardware of the sterilizer control system contains the operating panels easily locate in a suitable place. The CPU and power pack are

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placed in a separate electrical enclosure, connected to the operating panels.

Description of terms

STERILIZATION means the whole series of treatments to form a process in order to attain total killing of all viable organisms. This is in connection with autoclaves usually made up by air removal, heat treatment and a drying phase.

STERILIZING means the actual killing part, the heat treatment, of the total process.

Analogous to the two expressions above, STERILIZATION TIME means the durability of the total process from the start until the goods can be unloaded. PROCESS TIME is equal to sterilization time.

STERILIZING TIME represents that part of the process only during which the programmed STERILIZING TEMPERATURE prevails in the chamber.

PARAMETER in this context means the ELEMENTS WHICH INFLUENCE the sterilization course. Examples of parameters in the sterilization process are temperature, pressure, time, gas concentration, etc. The PARAMETER VALUES may be fixed in the program or operator adjustable.

F_0-VALUE is a time defined by the equation

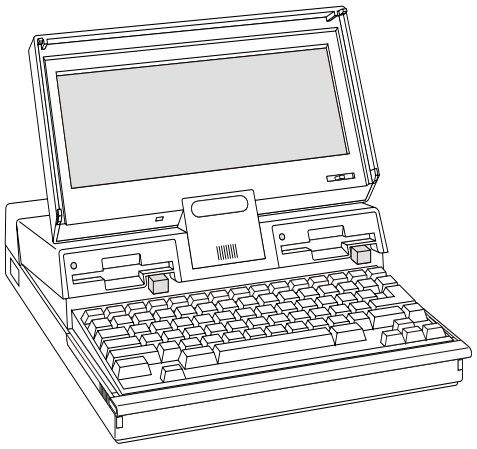
$$F_0 = \int_0^t 10^{\frac{T_{(t)} - k_1}{k_2}} \times dt$$

t	=	Time in minutes
$T(t)$ =		Load temperature at time t
k_1	=	Constant within the range 0.0 - 150.0 ^{o}C. Usually 121.1 ^{o}C
k_2	=	Constant within the range 0.0 - 99.9 ^{o}C. Usually 10.0 ^{o}C

The F_0. value is based upon the sterilizing time, required for the temperature prevailing in each moment, being recalculated to the base temperature for steam sterilization, 121.1^{o}C

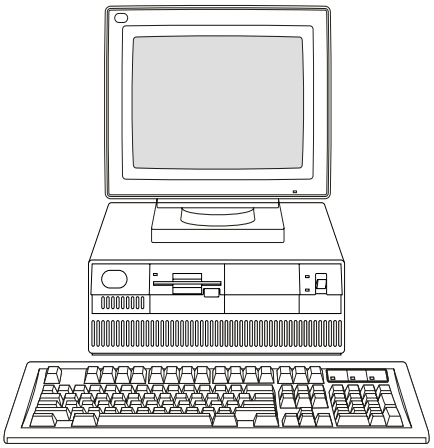
The use of F_0 value is most common in the pharmaceutical field, where often the time control of sterilization processes is based upon this value, thereby utilizing the heat applied during heating up and cooling down. By this method, heat sensitive products do not need to be exposed to high temperatures for a longer period of time than required in obtaining a sterile result.

OP C



OP C is a standard IBM compatible PC with DOS and with backup utilities on hard disk and floppy. OP C is intended to be used for program development. The menu tree includes menus for loading data on diskette or hard disk. OP C communicates with the PACS 2000 via a standard RS232 serial interface connected as COM1. COM2, if installed, may be used for connecting a printer or a PROM programmer. In Local mode it is possible to run the program without any PACS connected.

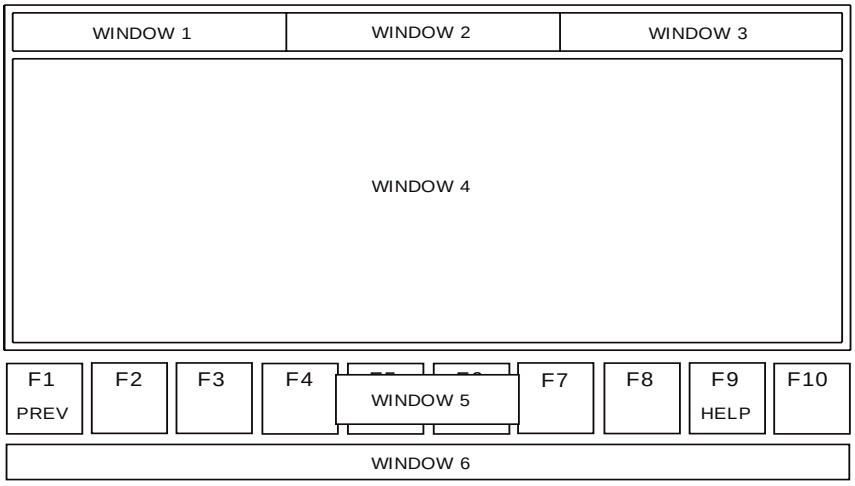
OP H



OP His identical to OP C with the extension that it can be connected to a network including more than one PACS. OP H communicates with the PACS 2000 via a standard RS485 serial interface. OP H is communicating with one PACS at a time.

Screen lay-out

The screen is divided into six windows, each one displaying different kind of information.



Window 1	shows system date and time shows connected sterilizer name and number on OP H
Window 2	shows sequence number and symbolic name for the active PACS program in on-line mode and program version number in local mode
Window 3	shows symbolic name and sub-phase number for the active PACS phase in on-line mode. Shows the text ”LOCAL MODE” when in that mode.
Window 4	shows all menu functions in the menu tree. Active menu headline is displayed in the upper right corner of the window.
Window 5	describes the active function of the keys **F1-F10**
Window 6	shows menu handling messages for all menus except process pictures. In process pictures the left part of the window is used for PACS error texts and the right part for PACS information texts

Function keys F1-F10

The function of these keys are depending on the menu selected in the menu tree and will be shown in fully written out text in a window on the display close to the appropriate key.

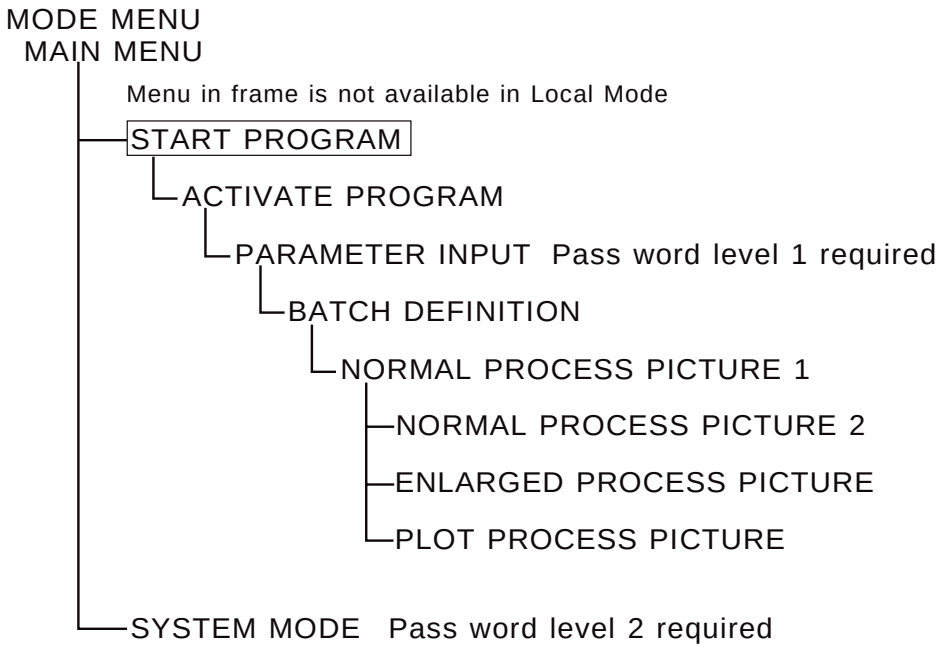
On line / Local mode

OP can operate in two modes, ONLINE mode and LOCAL mode. In On-line mode the communication link between OP and PACS is activated and the database in the two units contain identical data. In local mode OP works remotely without any communication with PACS.

Local modes are available in version OPH and OPC.

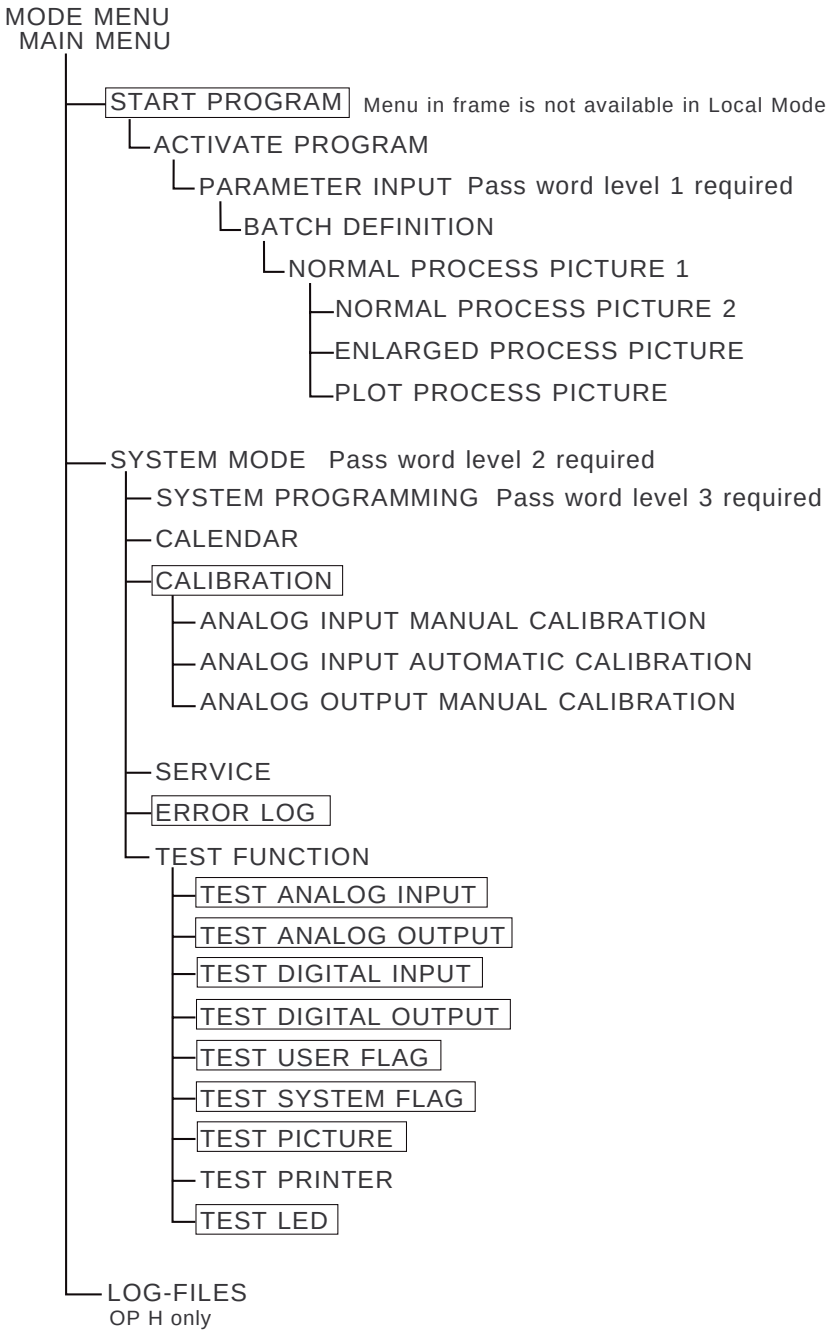
The OPC / OPH menu tree

Below follows that part of the menu tree which is of use for the operator.



The OPC / OPH menu tree

Below follows that part of the menu tree which is of use for the service man.



Passwords

Four passwords exists in the PACS 2000 and consists of four digits 0000-9999. The passwords are

- operator password
  needed to start restricted processes and to open doors after a process failure
- parameter password
  needed to accept change of program parameters
- service password
  needed for entering maintenance menus
- program password
  needed for entering programming menus

The parameter password may, as an option, be exchanged to a pass key connected to a digital input. The pass key overrides the parameter password.

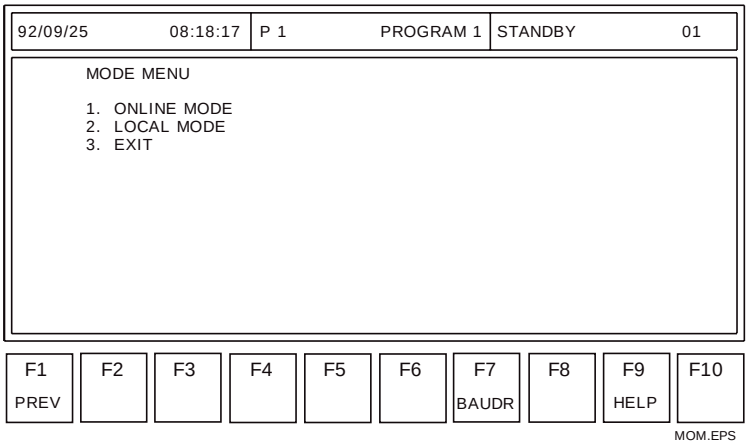
Passwords at delivery:
The passwords set in the control system is revealed in a special document delivered in a sealed envelope together with the sterilizer manuals.

Menu descriptions

Mode menu

This is the first menu shown after power-up. Here the operator can choose which mode the OP should work in.
ON-LINE MODE for connection with PACS 2000 or
LOCAL MODE for stand alone operation.

Alternative 3 in the menu terminates the program and returns to DOS. Parameter code is required to use this alternative.



MOM.EPS

An alternative is highlighted with ↑ ↓ and selected with **ENTER**. A alternative can also be highlighted by pressing the number of the desired alternative.

Before ON-LINE MODE is activated PACS 2000 communication baud rate can be altered. **F7** shows a window were the operator can choose between the alternatives 1200, 2400, 4800 and 9600 via a choice list. Default value is 9600 baud.

Valid only for OP H: If ON-LINE MODE is chosen a window is shown where the operator can specify which sterilizer he like to be connected to. Allowed values are: 1 - 99.

ON-LINE / LOCAL MODE
OP can operate in two modes, ON-LINE MODE and LOCAL MODE. In ON-LINE MODE the communication link between OP and PACS 2000 is activated and the data bases in the two units contains identical data. In LOCAL MODE OP works without any communication to PACS.

LOCAL MODE is available on version OP H and OP C while OP 3 always requires ON-LINE MODE.

Following menu functions are not available in LOCAL MODE:

- START PROGRAM and all underlying menus.
- CALIBRATION MENU and all underlying menus.
- ERROR LOGG
- TEST ANALOG INPUT
- TEST ANALOG OUTPUT
- TEST DIGITAL INPUT
- TEST DIGITAL OUTPUT
- TEST USER FLAG
- TEST SYSTEM FLAG
- TEST PICTURE
- TEST LED

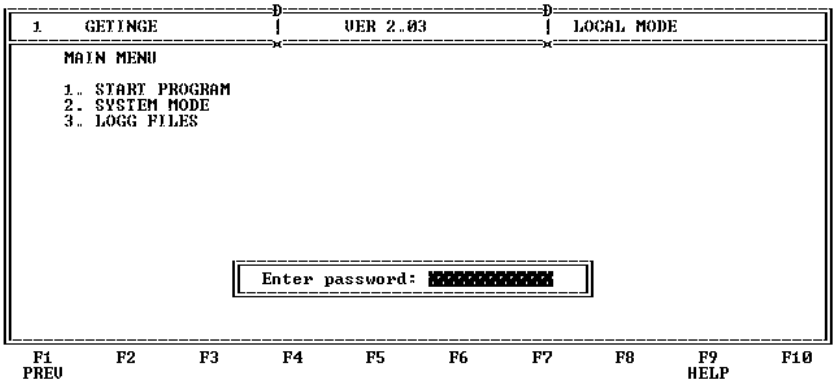
Function keys:
F1 PREV - Previous menu

F7 BAUDR - Activate PACS 2000 baud rate window

F9 HELP - Help text

Main menu

Select either START PROGRAM, SYSTEM MODE or LOG FILES by highlighting the desired text using ↑↓ or typing the leading number, then push **ENTER**.



Activation of SYSTEM MODE or LOG FILE requires a password with level 2 (service password) or higher. Non accepted password results in a message in window 6.

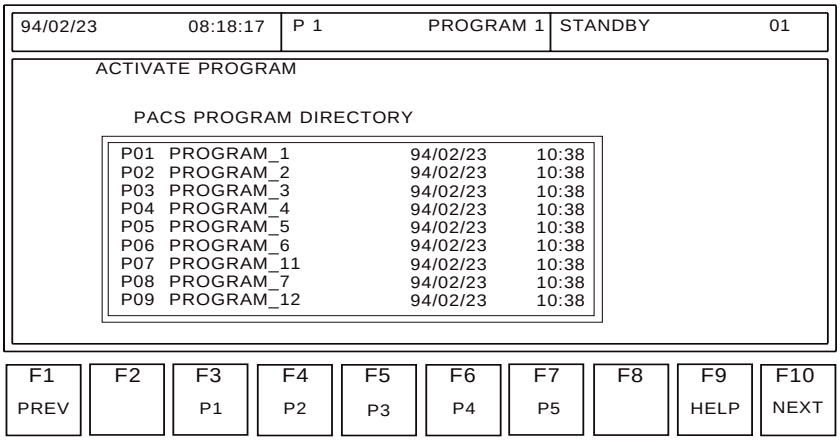
NOTE!
Item 3 LOG FILES on the menu is only available with OP H.

F1 PREV - Previous menu

F9 HELP - Help text

Activate program

Activate desired program, from the scrollable list.



Highlight desired program using ↑↓ and confirm selection with **ENTER**.
The first five programs in the list may also be activated by pushing **F3-F7**.
Activation of a program is automatically followed by PARAMETER INPUT menu.

Function keys:
F1 PREV - Previous menu

F3-F7 P1 - P5 - Activate first five programs in list

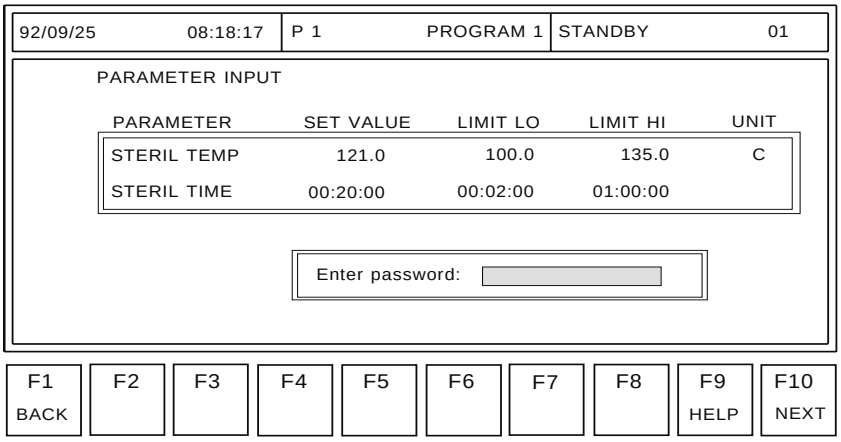
F9 HELP - Help text

F10 NEXT - Go to PARAMETER INPUT menu without activating any new program.

Parameter input

This menu will not be shown if the selected program does not contain any adjustable parameter.

With PACS in stand by mode only, this menu allows for the operator to change adjustable parameters for the previously selected program.



The parameter password must be entered to enable for any parameter to be changed. If password input is disabled with **F1**, the parameter list can only be scrolled through but no parameters can be changed.

If KEY password mode is enabled, the password window never occurs on screen. The status of the specified key input then decides whether the parameters are allowed to be changed or just displayed.

Parameter inputs are checked against the high and low limits shown on screen. Inputs beyond limits are met with a message in Window 6.

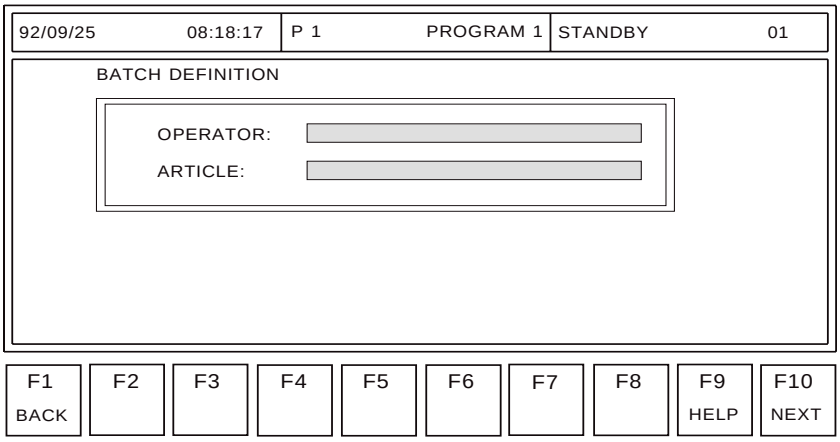
Function keys:
F1 BACK - Go to ACTIVATE PROGRAM menu.

F9 HELP - Help text.

F10 NEXT - Go to NORMAL PROCESS PICTURE 1 menu. If bar code is installed, go to BATCH DEFINITION menu.

Batch definition

Data in this menu are part of the information found in the printer log and should be entered prior to start of a process with PACS in stand by mode.



Each input contains maximum 16 characters. Only batch fields having field prompts defined are shown in this menu. The batch field prompts, maximum 6 fields, are defined in the PRINTER LOG DEFINITION.

If the definition prescribes field entry as a requirement, the field can not be left without any character entered.

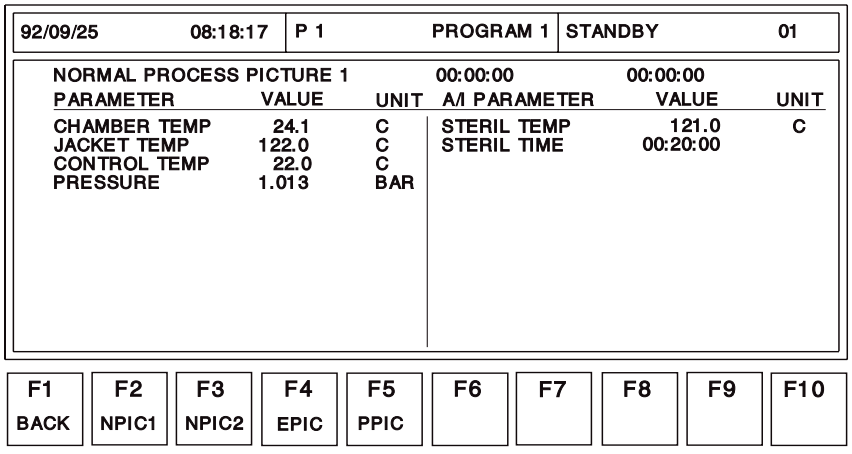
Function keys:
F1 BACK - Go to ACTIVATE PROGRAM menu.

F9 HELP - Help text.

F10 NEXT - Go to NORMAL PROCESS PIC.1 menu.

Normal process picture 1

This menu continuously displays PACS data on screen. No data entry possible.



Active process time and phase time are shown on the same line as the heading.

The left column shows the current values of the continuing process parameters. These are parameters defined in the 15 first entries of NORMAL PROCESS PICTURE DEFINITION.

The right column shows the set values of the continuing process 15 first A and I parameters. These will not be updated.

PACS error text is shown on the first half of line 25 and information text on remaining half.
Operator password will be prompted for on this line after a process failure.

Function keys:
F1 BACK - Go to ACTIVATE PROGRAM menu.

F2 NPIC1 - No function in this menu.

F3 NPIC2 - Go to NORMAL PROCESS PICTURE 2.

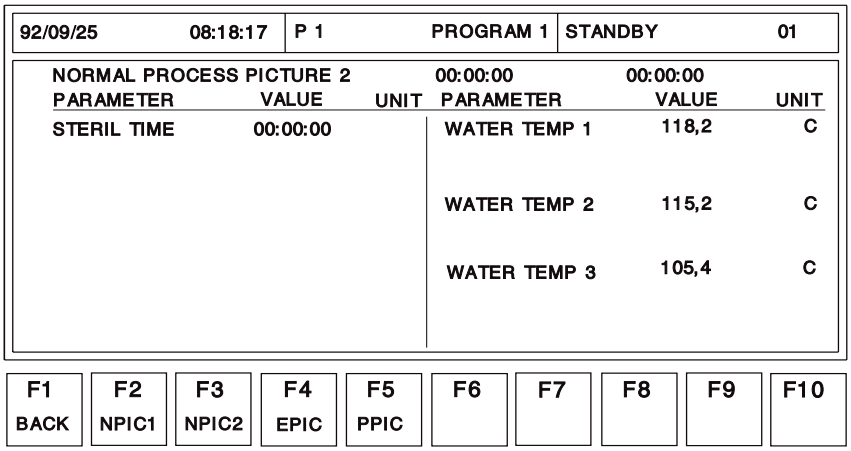
F4 EPIC - Go to ENLARGED PROCESS PICTURE.

F5 PPIC - Go to PLOT PROCESS PICTURE.

F6-F10 Name and function defined by PACS program.

Normal process picture 2

This menu continuously displays PACS data on screen. No data entry possible.



Active process time and phase time are shown on the same line as the heading.

The left column shows the current values of the continuing process parameters. These are parameters defined in the 16 - 30 first entries of NORMAL PROCESS PICTURE DEFINITION.

The right column shows the current values of the continuing process parameters. These are parameters defined in the 31 - 45 first entries of NORMAL PROCESS PICTURE DEFINITION.

PACS error text is shown on the first half of line 25 and information text on the remaining half.

Function keys:
F1 BACK - Go to ACTIVATE PROGRAM menu.

F2 NPIC1 - Go to NORMAL PROCESS PICTURE 1.

F3 NPIC2 - No function in this menu.

F4 EPIC - Go to ENLARGED PROCESS PICTURE.

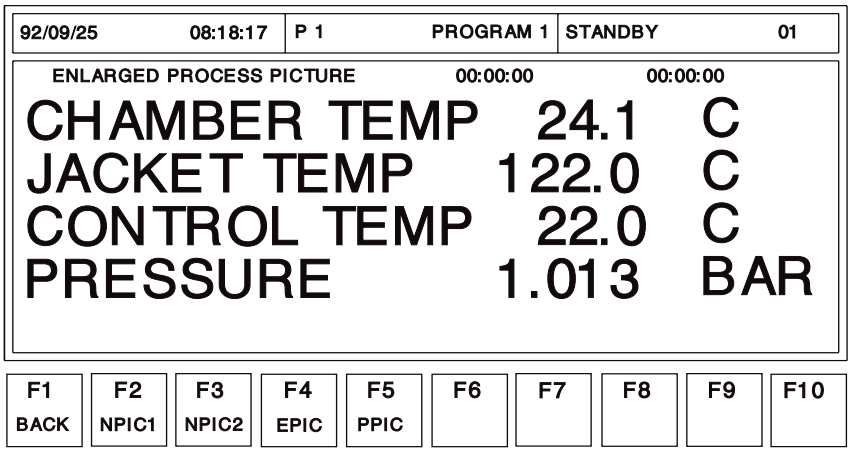
F5 PPIC - Go to PLOT PROCESS PICTURE.

F6-F10 Name and function defined by PACS program.

Enlarged picture

This menu continuously displays PACS data on screen. No data entry possible.

Data is displayed with enlarged characters in order to facilitate distant readings.



Active process time and phase time are shown on the same line as the heading.

Maximum 4 parameters can be shown in this menu. Actual parameters are defined in ENLARGED PROCESS PICTURE DEFINITION.

PACS error text is shown on the first half of line 25 and information text on remaining half.

Function keys:
F1 BACK - Go to ACTIVATE PROGRAM menu.

F2 NPIC1 - Go to NORMAL PROCESS PICTURE 1.

F3 NPIC2 - Go to NORMAL PROCESS PICTURE 2.

F4 EPIC - No function in this menu.

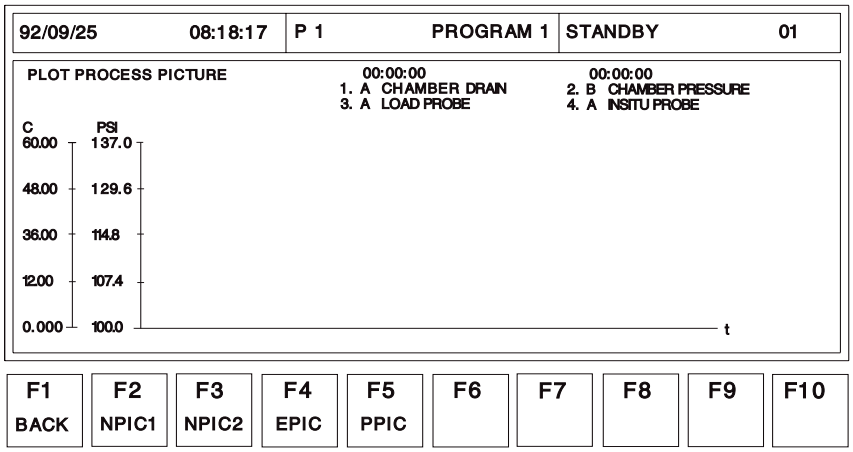
F5 PPIC - Go to PLOT PROCESS PICTURE.

F6-F10 Name and function defined by PACS program.

Plot process picture

This menu plots real time signals in a diagram on the screen.

Signal names and corresponding Y-axis are listed above the plot.



Active process and phase times are shown on the same line as the header.

Maximum 2 Y-axis and 6 signals can be displayed. Signals and Y-axis are defined in the menu PLOT PROCESS PICTURE DEFINITION.

PACS error text is shown on the first half of line 25 and information text on remaining half.

The length of the X-axis will automatically adapt to the duration of the active process.

Function keys:
F1 BACK - Go to ACTIVATE PROGRAM menu.

F2 NPIC1 - Go to NORMAL PROCESS PICTURE 1.

F3 NPIC2 - Go to NORMAL PROCESS PICTURE 2.

F4 EPIC - Go to ENLARGED PROCESS PICTURE.

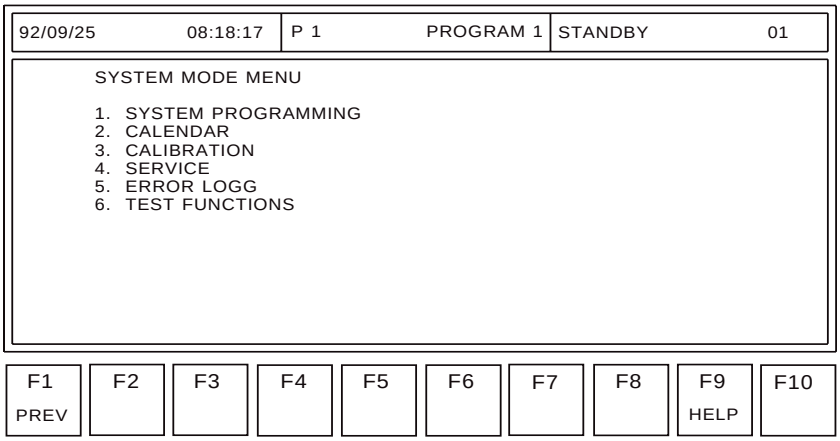
F5 PPIC - No function in this menu.

F6-F10 Name and function defined by PACS program.

System mode menu

Highlight desired alternative using ↑↓ down or leading number then push **ENTER**.

Activation of SYSTEM PROGRAMMING requires entering a passwords with level 4.

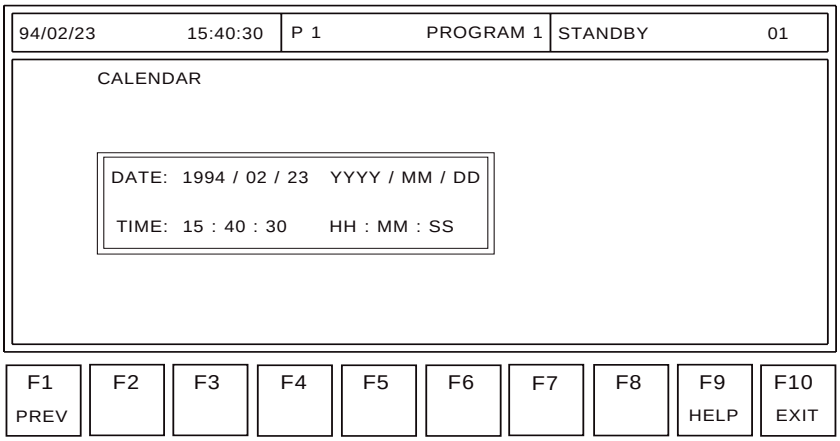


Function keys:
F1 PREV - Previous menu.

F9 HELP- Help text.

Calendar

Changing date and system time is made in this menu.



The format of date depends on the way it is specified in the SYSTEM CONFIGURATION menu.

Possible formats are:

SW - yy/mm/dd

US - mm/dd/yy

EU - dd/mm/yy

Ranges for time field are 00:00:00 - 23:59:59

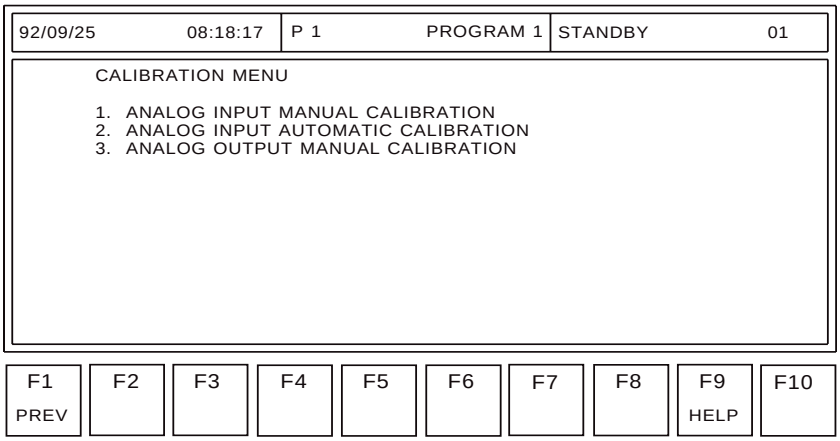
Function keys:
F1 PREV - Abort menu and cancel setting

F9 HELP- Help text.

F10 EXIT - Exit menu and activate setting

Calibration menus

Highlight desired alternative using ↑↓ or leading number and then push **ENTER**.

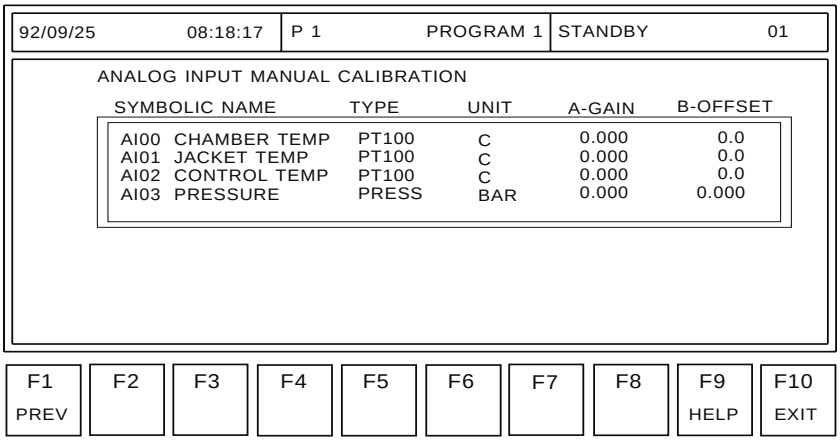


Function keys:
F1 PREV - Previous menu

F9 HELP- Help text.

Analog input manual calibration

The calibration constants gain (A) and offset (B) for analog input signals should be set in this menu.



The number of AI shown in the scrollable list is defined by the AI-modules specified in the SYSTEM CONFIGURATION MENU. A maximum of 32 AI-channels on 10 AI-modules can be specified.

A-gain is a value between 0.000 and 9.999.

The format (unit) of the B-offset is the same as that of the actual sensor. Input is limited to ±10% of the range of the actual, AI-sensor.

Function keys:
F1 PREV - Abort menu and skip all changes

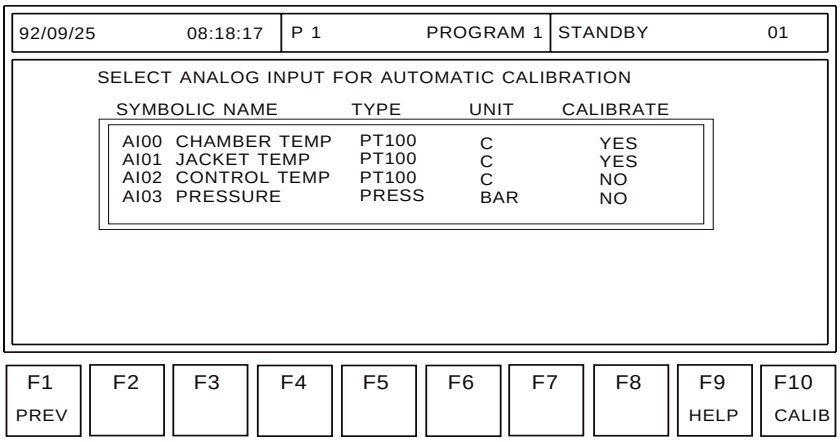
F9 HELP- Help text.

F10 EXIT - Exit menu and save changes.

Analog input automatic calibration

Selection of analog inputs

First of all the operator has to select the group of sensor to be calibrated by highlighting these.



The number of AI shown in the scrollable list is defined of the AI-modules specified in the SYSTEM CONFIGURATION MENU. A maximum of 32 AI-channels on 10 AI-modules can be specified.

A YES in the CALIBRATE field indicates that the sensor should be included in the calibration. The operator can toggle between the alternatives YES / NO with the button SPACE.

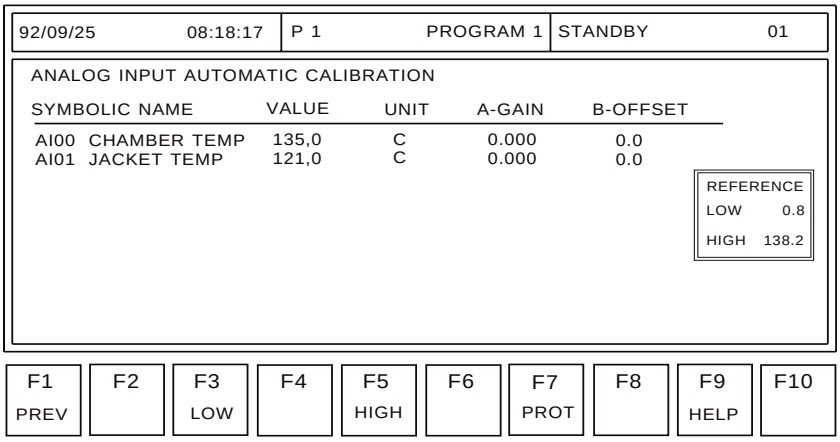
Function keys:
F1 PREV - Skip changes and go back to previous menu

F9 HELP - Help text

F10 CALIB - Go to automatic calibration.

Automatic calibration

This menu is used for automatic calibration of analog inputs.



Selected sensors are listed on the screen. A maximum of 14 sensors can be calibrated at the same time. Measured value and calculated A-gain and B-offset are continuously updated for selected sensors.

Calibration steps:

A Subject the sensors to the low reference medium and wait until the measured value is stable.

B Write the measured value in LOW REFERENCE field and push **F3** to send the value to PACS.

C Subject the sensors to the high reference medium and wait until the measured value is stable.

D Write the measured value in HIGH REFERENCE field and push **F5** to send the value to PACS.
At this time, PACS calculates new gain and offset constants. Calculated constants and measured sensor values are continuously updated on the screen.

By pushing **F7**, a calibration protocol is printed out. Before starting the print out, the operator may enter his signature in a pop up window, thereby including this signature in the protocol.

Function keys:
F1 PREV - Abort menu

F3 LOW - Send low reference to PACS

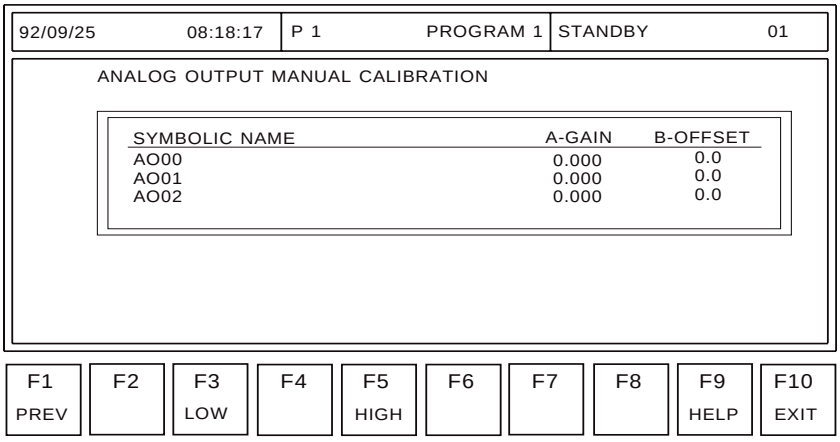
F5 HIGH - Send high reference to PACS and calculate new constants

F9 HELP- Help text.

F7 PROT - Print calibration protocol

Analog output manual calibration

This menu is to set calibration constants such as gain (A) and offset (B) for analog outputs.



The number of AO shown in the scrollable list is defined by the number of AO-modules specified in the SYSTEM CONFIGURATION menu.

Each module contains 2 channels.

A maximum of 4 AO-modules, i. e. 8 channels can be specified.

A-GAIN is a value between 0.000 - 9.999

B-OFFSET is a value between 000.0 - 100.0

A-GAIN and B-OFFSET are set directly by pressing **F10** when the factors have been modified.
Otherwise calibration can be made in accordance with following procedure:

A Enter A-GAIN and B-OFFSET for the channel to be calibrated.

B Mark calibration channel by placing the cursor in any field of this line.

C Activate LOW calibration by pushing **F3**. On this command, PACS will set actual AO-channel to 10.0% of maximum output using entered gain and offset constants.

D Activate HIGH calibration by pushing **F5**. On this command, PACS will set actual AO-channel to 90.0% of maximum output using entered gain and offset constants.

E Output value will be measured. Step A - D should be repeated until output measure is correct.

Function keys:
F1 PREV - Abort menu and skip all changes

F3 LOW - Activate low value calibration

F5 HIGH - Activate high value calibration

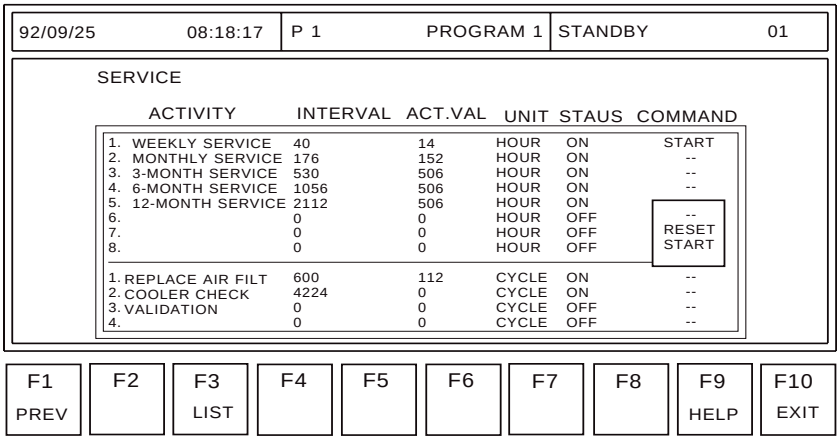
F9 HELP- Help text

F10 EXIT - Exit menu and save changes

Service

This menu is to supervise the service intervals of the sterilizer. These can be based either on time or on number of cycles. Eight of each can be defined.

When a time or cycle limit is obtained, the SERVICE system flag SF17 is set.


92/09/25 08:18:17
P 1 PROGRAM 1
STANDBY 01
SERVICE
ACTIVITY INTERVAL ACT.VAL UNIT STAUS COMMAND
1. WEEKLY SERVICE 40 14 HOUR ON START
2. MONTHLY SERVICE 176 152 HOUR ON --
3. 3-MONTH SERVICE 530 506 HOUR ON --
4. 6-MONTH SERVICE 1056 506 HOUR ON --
5. 12-MONTH SERVICE 2112 506 HOUR ON --
6. 0 0 HOUR OFF --
7. 0 0 HOUR OFF RESET
8. 0 0 HOUR OFF START
1. REPLACE AIR FILT 600 112 CYCLE ON --
2. COOLER CHECK 4224 0 CYCLE ON --
3. VALIDATION 0 0 CYCLE OFF --
4. 0 0 CYCLE OFF --
F1 PREV
F2
F3 LIST
F4
F5
F6
F7
F8
F9 HELP
F10 EXIT

F1 PREV - Previous menu

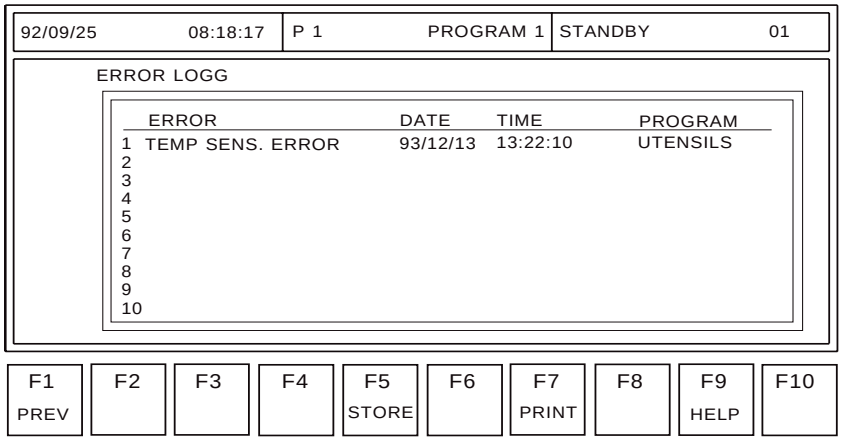
F3 LIST - Show choice list

F9 HELP- Help text.

F10 EXIT - Exit menu and save changes

Error log

This menu displays the error log. This contains type of error, date, time and the name of the program in which it occurred.



The error log contains information about the latest 20 errors. This means that the oldest message is erased each time a new error message is stored.

Function keys:
F1 PREV - Previous menu

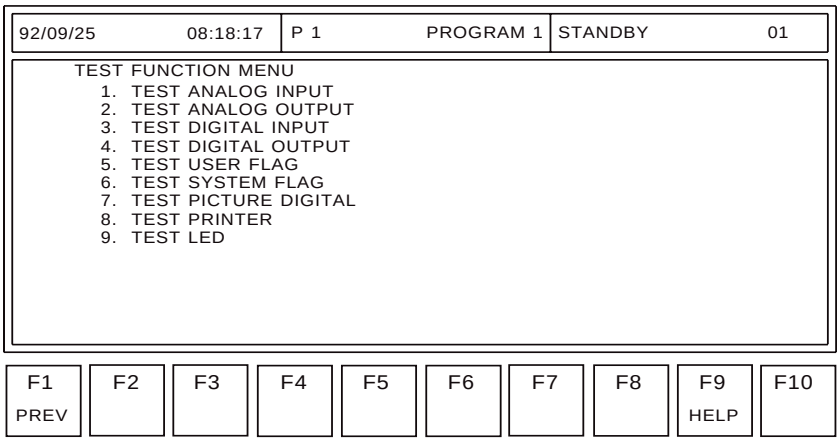
F2 STORE - Store error log on file

F7 PRINT - Print error log

F9 HELP - Help text

Test function menus

Test function menu.



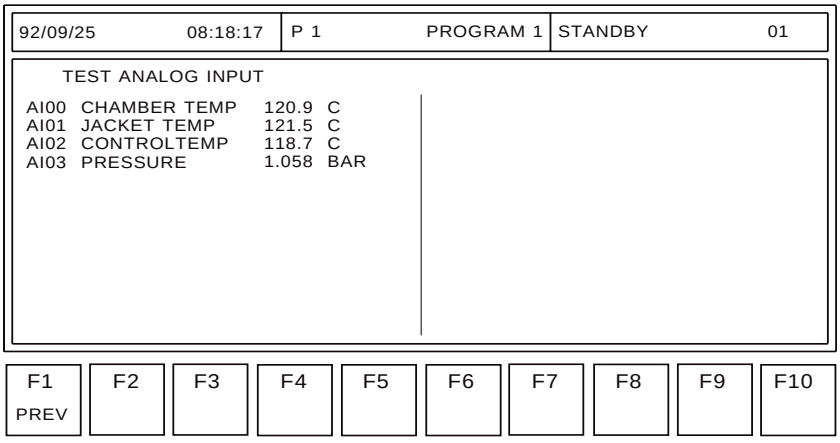
Use ↑↓ to highlight your choice, then push **ENTER**.

Function keys:
F1 PREV - Previous menu

F9 HELP - Help text

Analog input test

This menu shows all defined analog inputs in two columns on screen. Actual values are continuously updated.

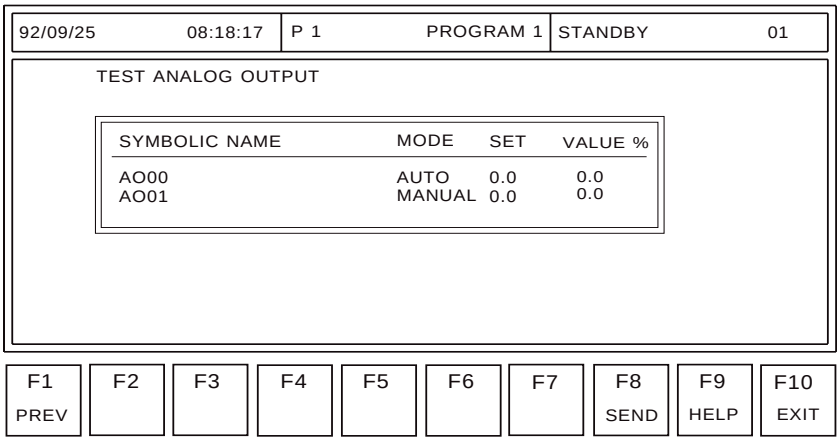


Function keys:
F1 PREV - Previous menu

Analog output test

The operator is, by setting the mode to MANUAL, disabling the built in safety system!
Make sure beyond all doubts that it is safe to set the output to manual mode before doing it.

In this menu, analog outputs can be set to desired values.
Actual values are continuously updated.



In AUTO mode the output is controlled by the PACS program

In MANUAL mode the output can be set to desired value.

The number of AO shown in scrollable form is defined of how many AO-modules are specified in SYSTEM CONFIGURATION menu. Each module contains 2 channels. A maximum of 4 AO-modules can be specified i. e. 8 channels.

MODE fields specify whether the output is in AUTO or MANUAL mode. Operator can, when in these fields, toggle between the two alternatives using the SPACE bar.

In the SET field the operator can specify the value to which the output should be set. Limits for the value field is 0.0 - 100.0%. Note that MANUAL mode must be selected, otherwise SET will be ignored by PACS.

With **F8** entered values can be sent to PACS without leaving this menu.

Function keys:
F1 PREV - Abort test.

F8 SEND - Send entered values and mode to PACS.

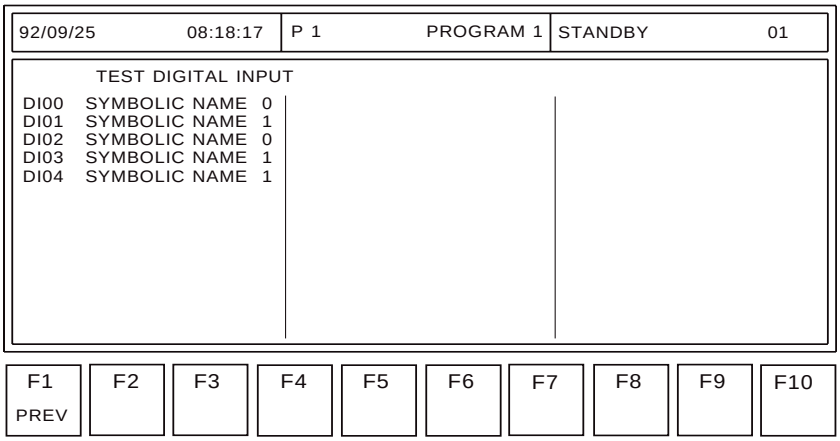
F9 HELP - Help text

F10 EXIT - Send entered values and mode to PACS and exit menu.

Remember to reset the mode to AUTO before leaving the menu.

Digital input test

This menu shows all defined digital inputs in three columns on screen. Actual values are continuously updated.

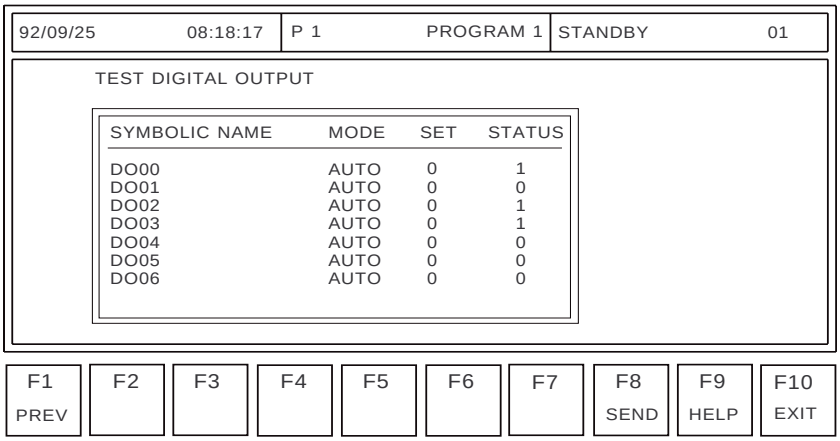


Function key:
F1 PREV - Previous menu

Digital output test

The operator is, by setting the mode to MANUAL, disabling the built in safety system!
Make sure beyond all doubts that it is safe to set the output to manual mode before doing it.

In this menu, digital outputs can be set to desired status.
Actual values are continuously updated.



In AUTO mode the output is controlled by the PACS program.

In MANUAL mode the output can be set to desired status.

The number of DO shown in scrollable form is defined of the number of DO-modules specified in SYSTEM CONFIGURATION menu. Each module contains 8 channels. A maximum of 8 DO-modules can be specified i. e. 64 channels.

MODE fields specify whether the output is in AUTO or MANUAL mode. Operator can, when in this field, toggle between the two alternatives using the SPACE bar.

In the SET fields the operator specifies the output status. Operator can, when in these fields and in MANUAL mode, toggle between 0 and 1 using the SPACE key

With **F8** entered status can be sent to PACS without leaving this menu.

Function keys:
F1 PREV- Abort test.

F8 SEND - Send entered values and mode to PACS.

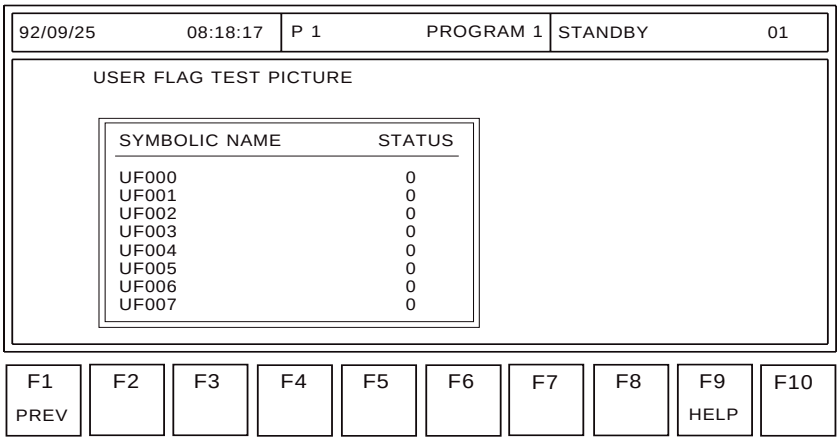
F9 HELP - Help text

F10 EXIT - Send entered values and mode to PACS and exit menu.

Remember to reset the mode to AUTO before leaving the menu.

Test user flag

This menu shows all defined user flags in a scrollable list on screen. Actual values are continuously updated.

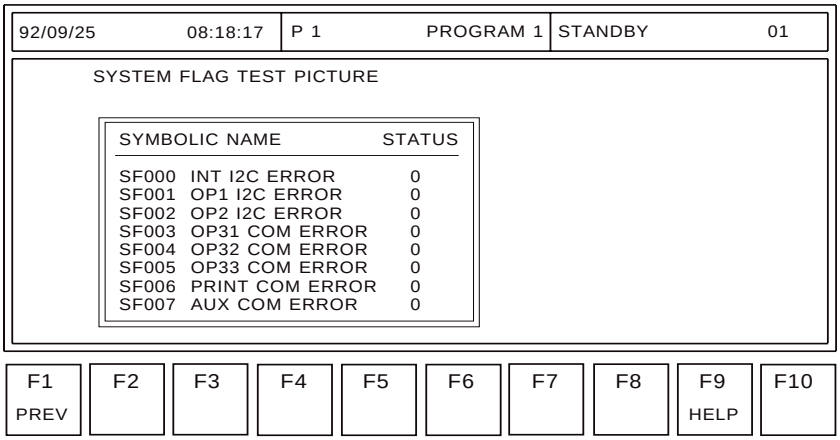


Function key:
F1 PREV - Previous menu

F9 HELP - Help text

Test system flag

This menu shows all defined system flags in a scrollable list on screen. Actual values are continuously updated.

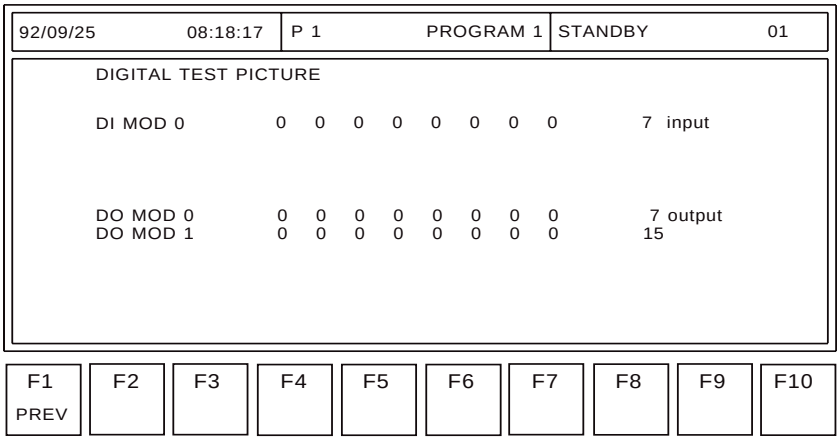


Function key:
F1 PREV - Previous menu

F9 HELP - Help text

Test picture

This menu shows the status of all digital inputs and outputs in the system. Status are continuously updated.

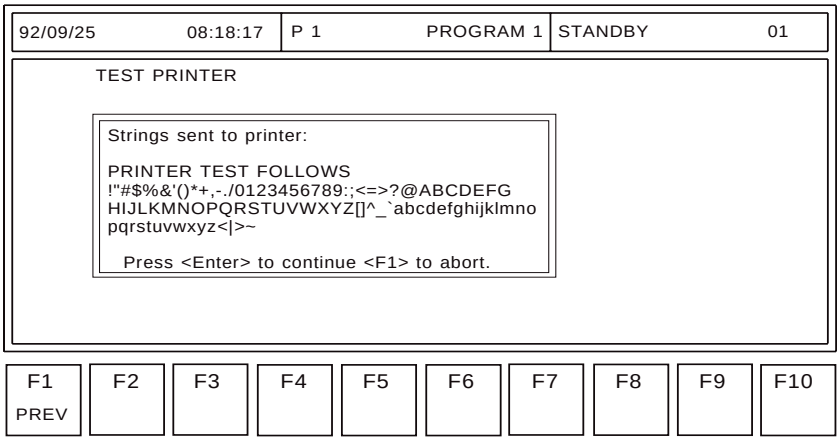


The number of shown DI / DO modules are specified in SYSTEM CONFIGURATION menu.

Function key:
F1 PREV - Previous menu

Test printer

This menu sends test strings to connected printer.



Shown test strings are sent to printer by pressing **ENTER**. Test is aborted with **F1**.

Function key:
F1 PREV - Previous menu

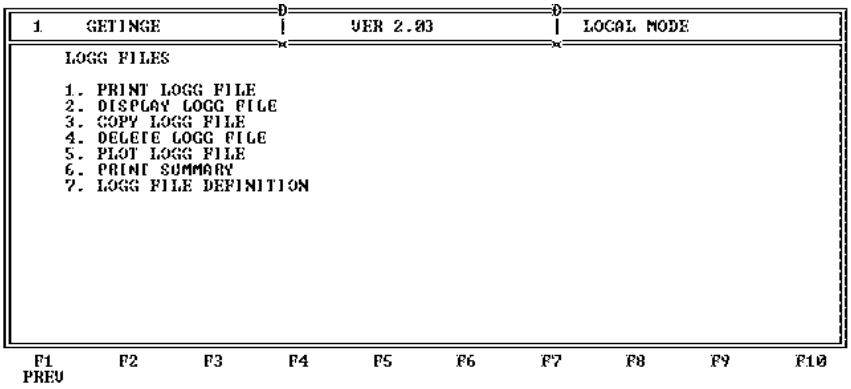
Test LED

When this menu is activated, a command is sent to PACS.

On this command, PACS makes all LED’s flash for about 5 seconds on all connected operating panels.

Log-files (OP H only)

This menu handles the log-file functions. the OP H program can store log-files from connected sterilizers on separate files.
Highlight desired alternative using the arrow-keys or simply enter the leading digit and press **ENTER**.



Function key:
F1 PREV - Previous menu

Print log-file

Print the selected log-file on a printer connected to the PC.

Highlight desired sterilizer number using the arrow-keys and press **ENTER.**
Select the log-file to be printed and press **ENTER**.

Function key:
F1 PREV - Previous menu

Display log-file

The selected file is displayed on screen.

Highlight desired sterilizer number using the arrow-keys and press **ENTER.**
Select the log-file to be shown and press **ENTER**.

Function keys:
F1 PREV - Previous menu

F6 BACK - Previous page of the log-file

F7 NEXT - Next page of the log-file

Copy log-file

The selected log-file is copied to disk and directory as decided.

- Highlight desired sterilizer number using the arrow-keys and press **ENTER.**

- Select the log-file to be copied and press **ENTER**.
- Specify the path and press **F10** to copy the file.

Function keys:
F1 PREV - Previous menu

F10 EXIT - Copy the file and leave menu

Delete log-file

A previously copied log-file is deleted.

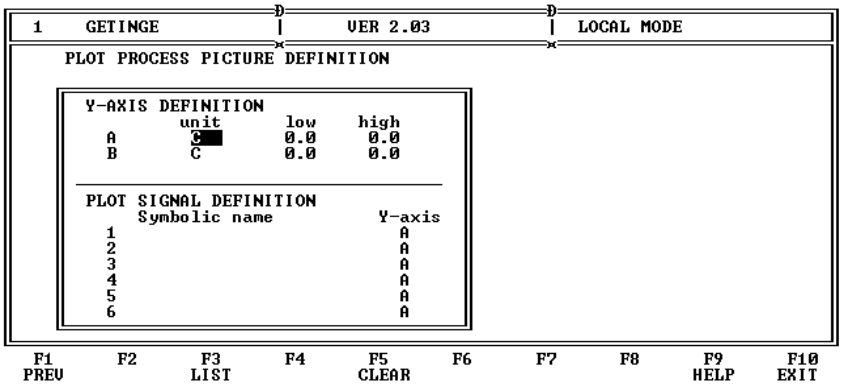
Highlight desired sterilizer number using the arrow keys and press **ENTER.**
Select the log-file to be deleted and press **ENTER**.

Note! Only files that have been copied can be deleted.

Function keys:
F1 PREV - Previous menu

Plot log-file

The log-file may be plotted on screen in almost the same way as is described under heading ”PLOT PROCESS PICTURE”. The difference is that the plot is not depending on settings made in ”PLOT PROCESS PICTURE DEFINITION” but on settings made in this menu.



Highlight desired sterilizer number using the arrow keys and press **ENTER.**
Select the log-file to be plotted and press **ENTER**.

Definition:
The plot picture can contain up to six signals and two y-axis.

Y-AXIS DEFINITION
Two Y-axis can be defined, A and B. An Y-axis is defined by **unit**, **low** value and **high** value.

Unit is specified via a choice list where the operator can choose between C/F, BAR/kPa/PSI, % and F0. The unit for temperature and

pressure is depending on selections made in the SYSTEM CONFIGURATION menu.

Formats and limits for **high** and **low** values are determined by the active **unit**.

UNIT	FORMAT	RANGE
C	xxx.x	0.0 - 999.9
F	xxx.x	0.0 - 999.9
BAR	x.xxx	0.000 - 9.999
kPa	xxx.x	0.0 - 999.9
PSI	xx.xx	0.00 - 99.99
%	xxx.x	0.0 - 100.0
F0	xxx.x	0.0 - 999.9

An Y-axis is as activated if the value in **high** is greater than that in **low**. If Y-axis A is not activated it will not be shown. If Y-axis B is not activated it is shown unmarked.

PLOT SIGNAL DEFINITION
Process picture signals are specified via a two step choice list where the operator can choose between defined AI, AO, F0, CP, DF and TP functions.

Y-AXIS defines which Y-axis a signal is related to. The operator can toggle between the alternatives A/B with **SPACE** when in these fields.

Function keys:
F1 PREV - Abort menu and skip all changes

F3 LIST - Show choice list

F5 CLEAR - Clear active field

F9 HELP - Help text

F10 EXIT - Exit menu and save changes

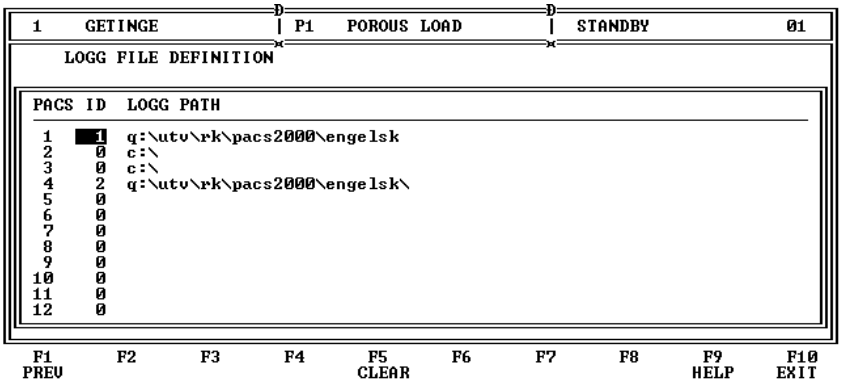
Print summary

An abstract containing the information listed below is sent to the printer connected to the PC.

- Header
- All phase shifts accompanied with a log.
- All errors together with log.

Log-file definition

This menu manages the definition of the log-file. Up to 20 sterilizers may be defined.



PACS ID is the unique number of the sterilizer as set in the SYSTEM CONFIGURATION MENU.
LOG-PATH describes the full way to the directory where the log-file is to be stored.

The following steps has to be taken before logging can be started.

- OP33 in SYSTEM CONFIGURATION MENU set on.
- System flag SF29 PC DISK LOG set.

The file name is composed in the following way:
<STERILIZER No:><MONTH><DAY><RUNNING No.>.LOG

Function keys:
F1 PREV - Abort menu and skip all changes

F5 CLEAR - Clear active field

F9 HELP - Help text

F10 EXIT - Exit menu and save changes

Technical data

PACS 2000 Ver. 2.0

Adaptation to line voltage by means of transformer			2 * 18 ±10% VAC, 50 - 60 Hz
Power consumption depending on the degree of extension			< 100 VA
Operating ambient temperature			+10 - +60 ^{o}C
Humidity resistance	control system		90% rel.
	front panels		100% rel.
Water and dust protection of	control system		IP43
	front panel		IP65
Electromagnetic compatibility			FCC 15 J, CIS PR22, EN 50081, EN 50082, IEC 801
PC board performance according to			CSA and UL
Maximum distance between operator panel and control unit			10 m
System sampling rate for all in- and outputs			4 Hz
Type of digital inputs supplied from system			Opto-coupled 24 V DC
Number of digital input modules			Maximum 8
Number of inputs with each module			8
Type of digital outputs			Relays, contact rating 12 A
Number of digital output modules			Maximum 8
Number of digital outputs with each module			8
Number of analog input modules			Maximum 10
Number of analog inputs.-	PACS 2000 alone		Maximum 32
	if PACS Supervisor is connected		Maximum 24
Number and kind of analog inputs with module type:		1.	3 RTD Pt100
			1 pressure
		2.	3 thermocouple type K
			1 pressure
		3.	6 RTD Pt100

4. 6 thermocouple type K
5. 2 RTD Pt100
   2 pressures
6. 4 general purpose
   - 0 - 20 mA
   - 0 - 5 V
   - 0 - 10 V
   - 4 - 20 mA*1

Analog inputs type:	A. Temperature	
	Sensor	Pt100 4-wire only
	Resolution	0.1 ^{o}C
	Inaccuracy	±0.1 ^{o}C
	Range	-5 - +150 ^{o}C
	B. Temperature	
	Sensor	TC type K, Chromel-Alumel
	Resolution	0.1 ^{o}C
	Inaccuracy	±0.2 ^{o}C
	Range	-5 - +150 ^{o}C
	C. Temperature	
	Sensor	TC type K, Chromel-Alumel
	Resolution	0.2 ^{o}C
	Inaccuracy	±0.4 ^{o}C
	Range	-5 - +800 ^{o}C
	D. Pressure	
	Sensor	Wheatstone bridge 0 - 500 mV/v
	Resolution	0.001 bar(a)
	Inaccuracy	±0.01 bar(a) for 0 - 1 bar(a) ±1% of actual value for 1 - 5 bar(a)
	Range	0 - 5 bar(a)

E. Pressure

Sensor	Wheatstone bridge
	0 - 300 mV/v
Resolution	0,001 bar(a)
Inaccuracy	±0.001 bar(a)
Range	0 - 1.5 bar(a)

F. General purpose

Sensor	0 - 20 mA, 4 - 20 mA*1,
	0 - 5 V, 0 - 10 V
Inaccuracy	0.1% of span
Range	As above

G. Scale

Sensor	0 - 20 mA, 4 - 20 mA*1,
	0 - 5 V, 0 - 10 V
Inaccuracy	0.1% of span
Range	0 - 500 kg

H. Concentration

Sensor	0 - 20 mA, 4 - 20 mA*1,
	0 - 5 V, 0 - 10 V
Inaccuracy	0.1% of span
Range	0 - 1200 mg/l

Analog outputs	0 - 20 mA, 4 - 20 mA, 0 - 5 V, 0 - 10 V
	Resolution 0.4%
	Activation rate 4 Hz
Number of analog output modules	Maximum 4
Number of analog outputs with each module	2

*1. All four inputs on the module will be set for 4 - 20 mA when this alternative is used.